Please amend the Specification as follows.

Replace Paragraph 15 with the following paragraph.

[0015] **FIG. 2** shows a known construction for an ion drift tube of an ion mobility spectrometer and its disposition to adjacent components of the spectrometer. The ion drift tube 202 has a stack of metal guard rings 204 and ceramic spacers 206 disposed between respective pairs of the guard rings 204. The guard rings can be made from various metals including, for example, stainless steel. In the arrangement shown in FIG. 2, the drift tube 202 has ten metal guard rings. One end of the ion drift tube is capped with a collector plate 208 to detect ions. The collector plate 208 may be connected to an electrometer (not shown). The collector plate 208 is electrically isolated from the guard ring electrodes by a nonconducting spacer 210. The nonconducting spacer [[208]] 210 is preferably formed of polytetrafluoroethylene (PTFE) material (e.g., TEFLON®). The assembly includes ports for the drift gas inlet 212, the sample gas inlet 214, and gas exhaust 216. A nickel (isotope 63) beta particle source 218 is embedded in a ceramic insulator 220 located at the front end of the drift tube 202. One or more gating electrodes 222, 224, and 226 that provide control of ion currents through the drift tube are disposed at various positions along the axis of the drift tube 202.

Replace Paragraph 16 with the following paragraph.

[0016] **FIG. 3** shows a physical arrangement of a known ion mobility spectrometer 300 with a reaction-ionization sector 302 that is abutting, but separate from the ion drift tube sector 304. A drift region electric field 306 is created by biasing the stack of metal guard rings 308 separated by machinable glass ceramic insulating rings 310. A coaxial stack of electrodes of smaller diameter and overall length defines

the reaction-ionization chamber 302. Ports for the sample/carrier gas inlet 314, drift gas inlet 316, and exhaust 318 are tapped into the instrument casing 320. A nickel foil beta radiation source 312 is embedded in the sidewall of the reaction-ionization tube 302 proximal to the sample/carrier gas inlet [[304]] 314. A Faraday plate 322 is disposed at the back end of the ion drift tube sector 304 and serves as the ion detector. Thermocouples 324 and 326 are arrayed at locations inside the spectrometer 300 for monitoring the temperature of the ion drift region and reaction-ionization region, respectively. A shutter grid 328 disposed adjacent the inlet end of the ion drift tube 304 and an aperture grid 330 disposed at the back end of the ion drift tube 304, provide control of the ion current in the ion drift region. Heating or cooling elements 332 can be wrapped around the ion drift tube region to control the temperature of the ion drift tube ambient.